

WHAT IS CLAIMED IS:

1. A sort processing method for comparing magnitudes of pieces of input data with each other and rearranging said pieces of input data in accordance with results of comparison, said method comprising the step of:

repeating basic processes, each of which is composed of a combination of a comparison processing and a selection processing, in a pipeline configuration, said comparison processing being used to compare magnitudes of pieces of input data with each other by using data comparators and said selection processing being used to select pieces of input data by using data selectors;

wherein the total number of said basic processes is equal to the number of combinations of pieces of input data to be compared.

2. A sort processing method according to claim 1 wherein the size of sort processing is increased by raising the number of basic processes to keep up with an increase in the number of pieces of input data.

3. A sort processing method according to claim 1 whereby, if necessary, a clock signal is used for synchronizing said pieces of input data.

4. A sort processing apparatus for comparing

magnitudes of pieces of input data with each other and rearranging said pieces of input data in accordance with results of comparison, said apparatus comprising:

first basic cells, each of which is composed of a first data comparator for comparing magnitudes of pieces of input data with each other and for outputting a first select signal, and a first data selector for rearranging said compared pieces of input data in a magnitude order on the basis of said first select signal;

wherein said first basic cells having the same number as that of combinations of pieces of input data to be compared are arranged in a pipeline configuration.

5. A sort processing apparatus according to claim 4 wherein said first data selector is provided with a pair of data selectors used for receiving a pair of pieces of input data; and

said first data selector is controlled on the basis of said first select signal so as to allow output terminals of said data selectors to output said pair of pieces of input data in a predetermined magnitude order.

6. A sort processing apparatus according to claim 4 wherein the size of sort processing is increased by raising the number of first basic cells to keep up with an increase in the number of pieces of input data.

7. A sort processing apparatus according to claim 4 wherein, if necessary, latches are used between said first basic cells in order to synchronize said pieces of input data which has been sorted.

8. A sort processing apparatus according to claim 4 wherein each of said first basic cells sorts particular ones of said pieces of input data by controlling said first data selector thereof for said particular pieces of input data by using said first select signal.

9. A sort processing apparatus according to claim 4 wherein, if the number of said pieces of input data is odd, an invalid piece of input data is added to said valid pieces of input data to make the total number of said pieces of input data even, and said invalid piece of input data is set at a value greater than a maximum among said valid pieces of input data or a value smaller than a minimum among said valid pieces of input data.

10. A sort processing apparatus according to claim 4 wherein said first basic cells are laid out over a rectangular area.

11. A sort processing apparatus for comparing magnitudes of pieces of compound data including key data and relevant data related to said key data with each other and rearranging said pieces of compound data in

accordance with results of comparison, said apparatus comprising:

second basic cells, each of which includes a second data comparator for comparing magnitudes of pieces of key data with each other and for outputting a second select signal, and a second data selector for rearranging said relevant data of said compound data in a magnitude order of said key data on the basis of said second select signal;

wherein said second basic cells having the same number as that of combinations of pieces of compound data to be compared are arranged in a pipeline configuration.

12. A sort processing apparatus according to claim 11 wherein said second data selector is provided with two pairs of data selectors for receiving a pair of pieces of said key data so as to perform selection of said key data and for receiving a pair of said relevant data so as to perform selection of said relevant data; and

each of said selectors is controlled on the basis of said second selection signal.

13. A sort processing apparatus according to claim 11 wherein the size of sort processing is increased by raising the number of second basic cells to keep up with an increase in the number of pieces of compound data.

14. A sort processing apparatus according to claim 11 wherein, if necessary, latches are used between said second basic cells in order to synchronize said pieces of compound data which has been sorted.

15. A sort processing apparatus according to claim 11 wherein each of said second basic cells sorts particular ones of said pieces of compound data by controlling said second data selector thereof for said particular pieces of compound data by using said second select signal.

16. A sort processing apparatus according to claim 11 wherein, if the number of said pieces of compound data is odd, an invalid piece of compound data is added to said valid pieces of compound data to make the total number of said pieces of compound data even, and said invalid piece of compound data is set at a value greater than a maximum among said valid pieces of compound data or a value smaller than a minimum among said valid pieces of compound data.

17. A sort processing apparatus according to claim 11 wherein said second basic cells are laid out over a rectangular area.